

DNA THERMOMIXER HEATING AND MIXING

A. SCOPE

The ThermoMixer allows for simultaneous heating and mixing of samples. The corresponding thermoblocks (SmartBlocks) can be exchanged quickly and easily to allow for the use of either 1.5 mL or 2.0 mL sample tubes. In addition, by using the ThermoTop, formation of condensation on the inner wall and lid of the tubes during sample heating can be prevented, allowing for optimal reaction conditions to continuously be met.

B. QUALITY CONTROL

- B.1 Protective gloves, a lab coat, and a mask must be worn at all times when performing this procedure.
- B.2 See DOC ID [1816](#) for information regarding the monthly performance verification of the ThermoMixers.

C. SAFETY

- C.1 Protective gloves, a lab coat, and a mask must be worn at all times when performing this procedure.
- C.2 Do not remove the thermoblock or ThermoTop during the mixing process.

D. REAGENTS, STANDARDS AND CONTROLS

- D.1 70% ethanol (decontamination)
- D.2 DNA Exitus Plus (decontamination)

E. EQUIPMENT

- E.1 Microcentrifuge tubes
- E.2 Eppendorf ThermoMixer
- E.3 Eppendorf Smartblock 1.5 mL
- E.4 Eppendorf Smartblock 2.0 mL
- E.5 Eppendorf ThermoTop

Document ID	Revision	Approval	Date Published
9151	5	Supervising Criminalist - Biology	12/20/2018 9:30:24 AM

*Printouts of this document may be out of date and should be considered uncontrolled.
The published version of the document should be viewed on-line in Qualtrax.*

F. PROCEDURES

F.1 Attaching a thermoblock

F.1.1 When you attach a thermoblock, the device automatically recognizes which thermoblock is mounted. First only attach the rear edge of the desired thermoblock (1.5 mL or 2.0 mL); the writing must face to the front.

F.1.2 Push the front edge of the thermoblock down until the thermoblock audibly engages and the display shows the name of the thermoblock.


F.2 Removing a thermoblock

F.2.1 To unlock the thermoblock, press the lever at the front of the thermoblock down.

F.2.2 Lift the front edge so that the thermoblock is tilted backwards.

F.2.3 Remove the thermoblock upwards.

F.3 With the desired thermoblock in place, insert microcentrifuge tubes containing your samples completely into the bores of the thermoblock. The temperature sensor of the thermoblock responds to the temperature of samples; after inserting samples into a pre-heated thermoblock, the displayed actual temperature may fall temporarily.

F.4 Place the ThermoTop on the device vertically from above. The centering pins behind the heating/cooling plate fit into the recesses of the ThermoTop. The ThermoTop is correctly positioned if the seal is fully flush with the upper part of the device, the blue LED of the ThermoTop lights, and the  symbol appears in the display.

F.5 Running a program

F.5.1 Program 1 (named "EXTRACTION") provides 56°C heating and 550 rpm mixing without any time limit, i.e. with an infinity time setting. This program is suitable for use during the cell lysis steps of the QIAamp Extraction of Blood and Epithelial Cells, QIAamp Differential Extraction, and QIAamp Extraction of Hair and Nail protocols.

F.5.2 Program 2 (named "10 MIN AL STEP") provides 56°C heating and 550 rpm mixing for 10 minutes. This program is suitable for use after addition of AL Buffer during the cell lysis steps of the QIAamp Extraction of Blood and Epithelial Cells and QIAamp Differential Extraction protocols.

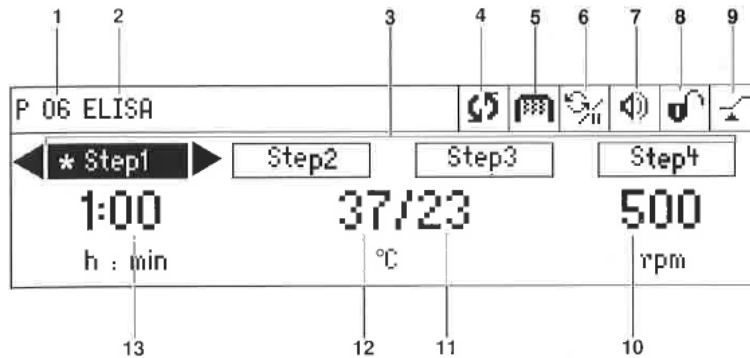
Document ID	Revision	Approval	Date Published
9151	5	Supervising Criminalist - Biology	12/20/2018 9:30:24 AM

F.5.3 In order to load Program 1 or Program 2, press the appropriate program key: **prog1** or **prog 2**. The LED above the program key lights blue and the display shows the parameters of the program.

F.5.4 To start the program, press the **start/stop** key.

F.5.5 To stop the program, press the **start/stop** key. Make sure to stop the program before removing the ThermoTop and microcentrifuge tubes containing your samples.

F.6 Display overview



1 Program number	2 Program name
3 Program levels (step 1 to step 4) *: current step	4 Device status Device is performing mixing/temperature control. Mixing process interrupted, temperature control to be continued
5 ThermoTop ThermoTop has been attached. To prevent the formation of condensate, the device heats up the ThermoTop, before the temperature of the thermoblock is controlled.	6 Interval Mix Interval mix has been activated for the current step.
7 Speaker Speaker switched on.	8 Key lock Key lock activated: parameters cannot be changed.
9 Time mode <i>Time Control</i> Time counting begins immediately. <i>Temp Control</i> Time counting begins when the	10 Mixing frequency

Document ID	Revision	Approval	Date Published
9151	5	Supervising Criminalist - Biology	12/20/2018 9:30:24 AM

set temperature has been reached.	
11 Actual temperature When the actual temperature flashes on the display, the device is not in temperature control mode operation.	12 Set temperature When the set temperature has been reached, only one value is displayed.
13 Mixing time	

G. INTERPRETATION GUIDELINES

Not applicable

H. REFERENCES

Eppendorf ThermoMixer C Operating Manual. Eppendorf AG, Hamburg, Germany 2013.

Document ID	Revision	Approval	Date Published
9151	5	Supervising Criminalist - Biology	12/20/2018 9:30:24 AM

*Printouts of this document may be out of date and should be considered uncontrolled.
The published version of the document should be viewed on-line in Qualtrax.*